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MEMORANDUM

TO: Trevor Walter, PE

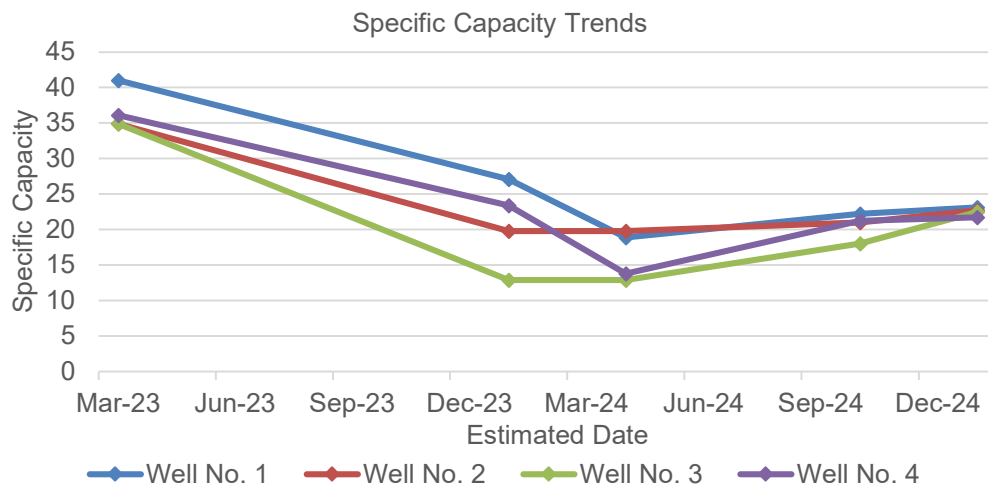
FROM: Kevin Young (Lic. MN, VA)

DATE: March 21, 2025

RE: Well Specific Capacity Update
SEH No. BAXTE 183117.9 14.00

Thein Well Company (Thein) conducted annual inspections of Baxter's four (4) existing wells in January 2025. During the inspections, Thein monitors various well performance criteria, including specific capacity. Well specific capacity is the volume of water that can be pumped from a well per foot of decreased water level during pumping, measured in gallons per minute per foot of drawdown (gpm/ft), and it can be used as an indicator of well condition. Additionally, Thein measured pre-rehabilitation and post-rehabilitation measurements which were recorded between April and October of 2024. The table and graph below present the specific capacity values from the last three annual inspections and the 2024 rehabilitation.

Specific Capacity, gpm/ft					
Well No.	Mar-23	Jan-24	Pre-Rehab, 2024	Post Rehab, Oct-24	Jan-25
1R	41.0	27.1	18.9	22.2	23.1
2R	34.9	19.8	19.8	21.0	22.7
3	34.9	12.9	12.9	18.0	22.5
4R	36.1	23.4	13.8	21.2	21.7



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From 2023 to 2024, the specific capacity of each well dropped significantly due to historical water demands experienced during the summer of 2023. After Thein's 2024 well inspection, the City decided to rehabilitate each well. Rehabilitation had varying results, but each well experienced an increase in specific capacity, which has continued to improve under the recommendation to operate the wellfield in a manner to reduce drawdown and impact to the aquifer as described below:

- **Well No. 1** specific capacity was increased from 18.9 gpm/ft pre-rehabilitation to 22.2 gpm/ft post-rehabilitation. The specific capacity has continued to improve to 23.1 gpm/ft in January 2025.
- **Well No. 2** specific capacity was increased from 19.8 gpm/ft pre-rehabilitation to 21.0 gpm/ft post-rehabilitation. The specific capacity has continued to improve to 22.7 gpm/ft in January 2025.
- **Well No. 3** specific capacity was increased from 12.9 gpm/ft pre-rehabilitation to 18.0 gpm/ft post-rehabilitation. The specific capacity has continued to improve to 22.5 gpm/ft in January 2025.
- **Well No. 4** specific capacity was increased from 13.8 gpm/ft pre-rehabilitation to 21.2 gpm/ft post-rehabilitation. The specific capacity has continued to improve to 21.7 gpm/ft in January 2025.

Relative change between inspections and rehabilitations in terms of percentage are provided in the table below.

Specific Capacity Percent Change			
Well No.	Pre-Rehab to Post Rehab	Jan-2024 to Jan-2025	Post Rehab to Jan 2025
1	14.9%	-14.8%	4.1%
2	5.7%	14.6%	8.1%
3	28.3%	74.4%	25.0%
4	34.9%	-7.3%	2.4%

Thein also noted in their inspection documents that the flow rate for each well increased relative to the prior year as well with the variable frequency drives (VFDs) set to a similar speed. Well No. 2 had the greatest increase at 9% and Well No. 4 had the lowest increase at 1%.

As a final recommendation, Thein stated that additional water supply sources should be sought in a different vicinity, in concurrence with ongoing water supply improvements projects completed or in progress. The 2025 inspection well inspection results suggest the wellfield operation recommendations made by SEH in 2024 have prevented the well capacity from declining further.

TAT

Enclosure: 2025 Thein Inspection Documents

c: Trevor Thompson, Assistant City Engineer

Neil Heinonen, SEH

Scott Hedlund, SEH